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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/963,499	09/27/2001	Eiichi Nishimura	31869-174988	8830

7590 10/20/2004
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WASHINGTON, DC 20005

EXAMINER

BRINEY III, WALTER F

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 10/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/963,499

Applicant(s)

NISHIMURA, EIICHI

Examiner

Walter F Briney III

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- 1. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horna (US Patent 4,600,815) in view of Lane et al. (US Patent 6,381,224).**

Claim 1 is limited to *an echo canceller receiving a transmit signal and a receive signal, the transmit signal including an echo of the receive signal*. Horna discloses an automatic gain control for echo cancellers and similar adaptive systems. See Abstract. The embodiment of interest is depicted in figure 3. Clearly, the echo canceller system disclosed by Horna includes all the typical elements of an echo canceller that removes an echo of a received signal from a send signal. The echo canceller filter (14) is disclosed as being sensitive to double-talk situations, and disables its adaptation in the presence thereof (column 2, lines 33-63) (i.e. *does not update when the transmit signal is active*). In addition to the typical components, Horna discloses two matched attenuators (32 and 33) (i.e. *first and second automatic gain control units*) that equally amplify the send signal and the echo replica signal before combining them at the summer (12). These attenuators share a common control (302) (i.e. *a signal level data generator*), however, Horna does not disclose or suggest how or when to update the amount of attenuation provided by the attenuators, but that the attenuators only

attenuate signals of abnormally high amplitude, which is consistent with a typical automatic gain control system. Therefore, Horna anticipates all limitations of the claim with the exception of *detecting activity of the transmit signal and the receive signal, generating signal level data for the transmit signal, and updating the signal level data when the transmit signal is active and the receive signal is inactive.*

Lane teaches a method and apparatus for controlling a full-duplex communications system. See Abstract. The features of Lane depicted in figure 3 represent an acoustic echo canceller with AGC applied to the microphone input, which is similar to the system disclosed by Horna. The main difference between Horna and Lane is that Lane teaches detecting the speech state of both the near and far end signals before applying a type of gain control. See column 3, lines 53-57. It is clear that this enables the system to maintain the input signal's dynamic range in various circumstances that require different optimal approaches. For example, during a talk mode (i.e. *transmit signal is active and receive signal is inactive*), a gain factor (G) is updated according to typical AGC methods. See column 5, lines 21-31. It would have been obvious to replace the AGC method of Horna with the speech state dependent AGC method as taught by Lane for the purpose of controlling the dynamic range based on the various optimal operating methods required by the different speech states.

Claims 6, 7, 9 and 10 are essentially the same as claim 1, and are rejected for the same reasons.

Claim 2 is limited to *the echo canceller of claim 1*, as covered by Horna in view of Lane. Lane teaches the detection of speaking states before determining which type of

AGC to apply to the input signal from a near-end. See column 3, lines 53-57. As seen in figure 4, that detection is performed with the aid of variable thresholds T_T and T_R (i.e. *the signal level data generator uses a first criterion to decide whether the transmit signal is active, and a second criterion to decide whether the receive signal is active*). Horna has been shown to disclose that the echo canceller therein is sensitive to a double-talk state, and freezes adaptation in response to double-talk. However, Horna does not disclose how to make that determination. Therefore, Horna in view of Lane makes obvious all limitations of the claim with the exception *wherein the echo cancellation signal generator uses a first and second criterion...*

The speaking state method taught by Lane would be suitable for speaking state detection in the echo canceller of Horna. Not only does it satisfy the double-talk detection requirements therein, but also includes improved thresholds that adapt to the particulars of the physical hardware. (See column 3, line 61-column 4, line 36). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the speaking state detection method as taught by Lane because speech detection is a universal function, applicable in numerous applications and because the method of Lane includes the ability to adapt the detection thresholds in response to the system's properties.

Claim 3 is limited to *the echo canceller of claim 2*, as covered by Horna in view of Lane. As seen in figure 4 of Lane, the criteria for detecting talk and listen modes includes a comparison with the threshold T_T (i.e. *a first minimum input level*) and the

threshold T_R (i.e. *a second minimum input level*). Therefore, Horna in view of Lane makes obvious all limitations of the claim.

Claim 11 is essentially the same as claim 3, and is rejected for the same reasons.

Claim 4 is limited to *the echo canceller of claim 3*, as covered by Horna in view of Lane. The speaking mode detection method of Lane can be summarized as comparing the ratio of the transmitting and receiving signals' energy to the two adaptive thresholds mentioned earlier. Clearly, when the transmit signal's energy exceeds the receive signal's energy by T_T , the device is in the talking state; and when the receive energy exceeds the transmit energy by T_R , the device is in the listen state. See figure 4. Therefore, Horna in view of Lane makes obvious all limitations of the claim.

Claim 5 is limited to *the echo canceller of claim 1*, as covered by Horna in view of Lane. As disclosed by Horna, the two attenuators (32 and 33) must have identical gain to stabilize the echo loop (i.e. *wherein the first automatic gain control unit and the second automatic gain control unit operate with mutually identical gain*). See column 4, lines 27-40). Therefore, Horna in view of Lane makes obvious all limitations of the claim.

Claims 8 and 12 are essentially the same as claim 5, and are rejected for the same reasons.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter F Briney III whose telephone number is 703-305-0347. The examiner can normally be reached on M-F 8am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W Isen can be reached on 703-305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WFB
10/14/04


XU MEI
PRIMARY EXAMINER